PROJECT SCOPING DOCUMENT

for

the Proposed Ditch Construction along US-2
Between Brevort Campground Road and Pointe Aux Chenes
In Moran Township, Mackinac County, Michigan

C.S. 49023
J.N. 77191A

Prepared by the:

MICHIGAN DEPARTMENT OF TRANSPORTATION

In Cooperation with the

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
U.S. FOREST SERVICE

Project Location

The Michigan Department of Transportation (MDOT) proposes the following project in Moran Township, Mackinac County, Michigan (C.S. 49023, J.N. 77191A). The project begins on US-2 approximately 1 mile east of Brevort Campground Road (County Road 526), Station 361+51 (mile point 10.902), then south easterly approximately 4.07 miles to Station 576+50 (mile point 14.974) (See Exhibit 1 – Project Location Map).

Existing Conditions

Currently there is a 4.07 mile segment of open dune habitat adjacent to US-2 that has created maintenance challenges due to blowing and drifting sand. This sand quickly accumulates on the paved shoulder of US-2 due to the lack of a maintained ditch. Without ditches along this portion of US-2, drainage has become a problem causing water ponding on the shoulders and traffic lanes. In many areas, the sand dunes are high enough and adjacent to the paved shoulder of US-2 that snowplows cannot effectively remove snow from the highway during the winter months. This problem becomes worse as winter progresses and there is not enough storage capacity for the snow due to the height of the dunes prohibiting removal. This creates ponding water that leads to ice formations on the shoulder and travel lanes, creating unsafe conditions for motorists. The Michigan State Police (Mr. Patrick London), U.S. Forest Service (Mr. Stevan Christiansen), and MDOT (Mr. David Rusch) have acknowledged and documented these safety concerns for years.

This open dune community throughout this project corridor contains four state and federally listed plant and animal species. These species include:

- Lake Huron tansy - *Tanacetum huronense* (State Threatened)
- Pitcher's thistle - *Cirsium pitcheri* (State and Federally Threatened)
- Lake Huron locust - *Trimerotropis huroniana* (State Threatened)
- Piping plover - *Charadrius melodus* (State and Federally Endangered)

The highway was created along the Lake Michigan coastline in 1937 and since then sand maintenance has been an ongoing challenge. Over the last 70 years, the blowing sand and lack of ditch maintenance has created large dunes adjacent to US-2. This condition has grown worse as the MDOT has continued to remove only the sand that falls upon the paved shoulders. In some areas, this has created steep sloped walls of sand, 2 feet to 6 feet tall, adjacent to the shoulder (see Photograph One). These obstructions pose a threat to vehicles and motorists that need to use the paved shoulder in emergencies. As additional sand continues to accumulate, the dune height grows until the angle becomes steep enough that it slumps on to the shoulder. Michigan Dept. of Transportation then removes this sand and transports it to another upland location. This maintenance cycle has continued for decades and promotes dune growth adjacent to US-2.

Due to the close proximity of the dunes adjacent to US-2, clear zone distances are limited in both straight and curved portions of the highway. The MDOT and American Association of State Highway and Transportation (AASHTO) Roadside Design Guide have established federally recognized minimum clear zone distance requirements for all roadways. In several areas along US-2 these recommended distances are below the design specifications and do not provide the proper recovery distance for errant vehicles. Furthermore, the encroachment of the dunes does not allow motorists enough time to react during daily driving situations and emergencies.

Purpose of the Proposed Project

The purpose of this proposed project is to enhance safety along the US-2 corridor in close proximity to the open dune communities adjacent to Lake Michigan. The goal is to develop a long-term maintenance plan that meets the safety needs of the motoring public while minimizing impacts to the open dune community and threatened and endangered species. Highway safety has continued to deteriorate over the years due to a lack of proper ditch maintenance along US-2. This has allowed the dunes to grow in height and migrate adjacent to the paved shoulder. This has created several safety concerns including water drainage, ponding, ice formation on the highway, reduced/limited sight distance for motorists, and difficulty providing snow removal on the highway. This project would develop a safe and efficient transportation maintenance strategy, which effectively addresses traffic and safety requirements created in this unique open dune community.

Need for the Proposed Project

The needs for the proposed project include:

- Provide clean, sand free shoulders and travel lanes on US-2 by creating ditches that provide a place for drifting sand to accumulate.
- Maintain proper drainage of the highway using an open ditch along US-2 to eliminate summer ponding and winter ice formation.
- Provide a safe area for vehicles and motorists to pull off the road in emergencies by eliminating the vertical sloped dunes adjacent to the shoulder of US-2.
- Allow for proper snow removal and storage by decreasing the height of the sand dunes adjacent to the shoulder of US-2.
- Provide proper MDOT/AASHTO clear zone requirements, which give motorists the required sight and recovery distances by moving the back-slope of the dunes away from the shoulder of US-2.

Proposed Project Description

This proposed project involves construction of a ditch along this 4.07 mile segment of US-2 in Mackinac County. A V-bottom ditch would be constructed to a depth of 1.75 ft with 1 on 4 side slopes (See Photograph Two). Excavation of the ditch would occur from the bottom to the point the back slope stabilizes at the natural angle of repose (collapse) for sandy soils. These slopes would then be revegetated with native dune grass and stabilized with a sand fence where needed. Exhibit 2 illustrates the typical cross-sections, construction limits, design, and ditch profile of this proposed project. The MDOT's construction methods would follow the 2003 Standard Specifications for Construction, Special Provisions, Special Details, and/or Standard Plans.

Proposed Yearly Maintenance Activities

Once the back-slopes have been vegetated, sand removal would be required in the spring and fall to maintain proper design profile and ditch function. This excavated sand would be disposed of in upland areas outside of the project limits in areas with existing steep slopes and guardrail. The MDOT proposes to make this a five-year maintenance agreement with all of the project partners: MDOT, Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality, United States Fish and Wildlife Service (USFWS) and United States Forest Service (USFS) based on the constraints of the Coastal Zone Management permitting process for sand removal.

Potential Environmental Impacts

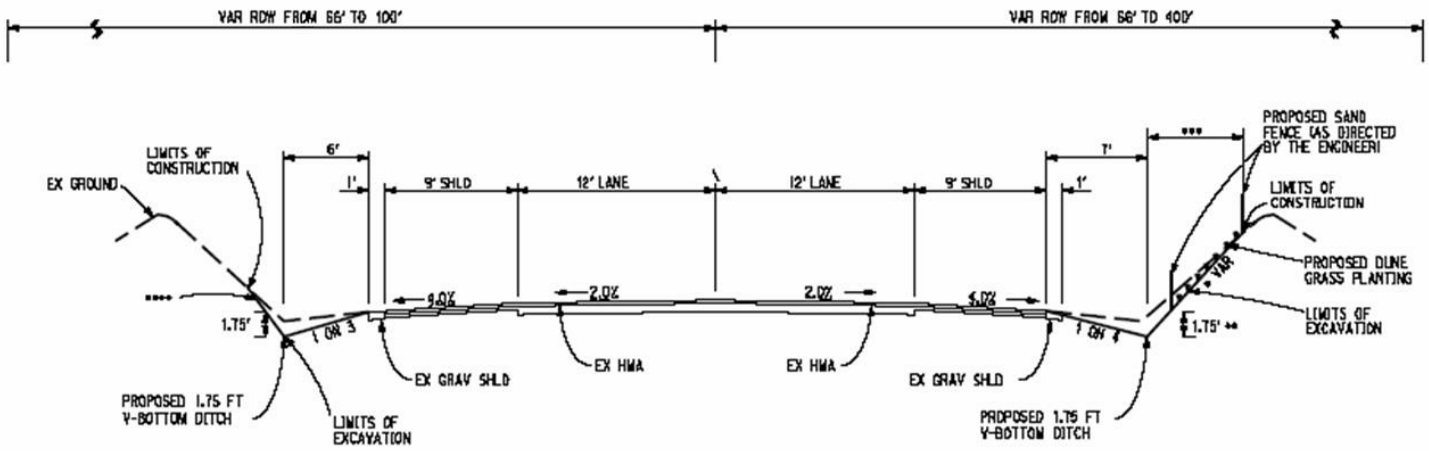
Currently MDOT is working with the MDNR, USFWS, and the USFS to determine the level of impacts. Furthermore, the MDOT is undergoing Section 7 Formal Consultation with the USFWS (Pitcher's thistle and piping plover) which will not be concluded until an alternative has been selected, impact analysis is complete, and mitigation items have been addressed.

Impacts from construction would result in a direct taking of 19 Pitcher's thistle plants and approximately 300 ramets (individual shoots in a colony) of Lake Huron tansy. This taking could potentially be lowered by transplanting these plants into adjacent suitable habitat. Potential impacts to piping plover would be minimized by performing work activities when the birds are not present within the project area (late fall). The Lake Huron locust impacts are harder to assess, as methods do not currently exist for this type of impact analysis. It is believed that impacts would be low as the gravel and open sand shoulder of US-2 is not suitable habitat for this species. The locust are flushed easily from cover when disturbed, thereby minimizing impacts during construction activities. The newly created ditch and proposed maintenance activities should prohibit this species from colonizing these areas due to lack of suitable habitat.

Short-term impacts to the open dune community would occur due to the removal of sand during construction of the proposed ditches. Creation of the ditch would cause sand from the highest part of the dune to collapse to the natural angle of repose. Once this occurs, the dunes would be 4-6 feet shorter than they currently are (10-14 feet tall). Following construction of the ditches and stabilization of the back-slope, the dune structure would stabilize behind the maintained ditch. Native dune grass plantings and other erosion control measures would be used to stabilize the disturbed areas.

MDOT

Exhibit 1



PROPOSED CROSS SECTION

(SA) STA 372+20 TO STA 462+80 (LT)
(SC) STA 493+60 TO STA 522+32 (LT)
(SE) STA 525+29 TO STA 576+50 (LT) (POE)

(L) STA 361+51 (POB) TO STA 373+42 (RT)
(4) STA 435+70 TO STA 494+56 (RT)
(4) STA 564+87 TO STA 576+50 (RT)

NO PROPOSED WORK FROM:
STA 361+51 (POB) TO STA 372+20 (LT)
STA 462+80 TO STA 486+70 (LT)
STA 373+42 TO STA 435+70 (RT)
STA 494+56 TO STA 564+87 (RT)

* PROPOSED VARIABLE BACKSLOPE FROM NATURAL ANGLE OF REPOSE TO 1 ON 1

** DUNE GRASS PLANTING SHALL START 1.75 FEET ABOVE DITCH LINE

*** VARIABLE FROM 4 TO 14 FEET FROM DITCH CENTER LINE

**** BACKSLOPE TO MATCH NATURAL ANGLE OF REPOSE OF SAND

CONTROL SECTION 49023

JOB NUMBER 77191A

Photograph One: This photograph illustrates current conditions along US-2, sand accumulation on the paved shoulder causing numerous safety concerns.

Photograph Two: This is an example of the proposed V-bottom ditch constructed to a depth of 1.75 feet with 1 on 4 sideslopes and the back-slope at the natural angle of repose for sandy soils.